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RESEARCH REPORT

Fast Similarities: Efficiency Advantages of Similarity-Focused Comparisons

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People constantly have to make efficient use of their limited cognitive resources. Recently, T. Mussweiler and K. Epstude (2009) demonstrated that comparative thinking simplifies information processing and increases the efficiency of judgment. However, there are different types of comparative thinking. While comparing 2 entities, people may focus on either similarities or dissimilarities between target and standard. The authors propose that these 2 comparative thinking styles differ in their efficiency. Specifically, the authors hypothesize that comparisons with a focus on similarities lead to more focused information processing and faster judgments than comparisons with a dissimilarity focus. In line with these hypotheses, the authors demonstrate that participants are indeed faster at judging the similarity of 2 stimuli (Study 1) and that they search for less target information in a comparative judgment task (Study 2) if they focus on similarities rather than dissimilarities. Focusing on similarities thus appears to be the more efficient comparative thinking style.

Keywords: comparative thinking styles, efficiency, comparisons, judgments, similarity

People are often overwhelmed by the number of cognitive tasks they have to master. To preserve cognitive resources, they have a tendency to rely on efficient information-processing strategies like stereotyping (Macrae, Milne, & Bodenhausen, 1994) or using judgmental heuristics (Tversky & Kahneman, 1974). That is, they behave as cognitive misers (Taylor, 1981).

One cognitive mechanism that increases the efficiency of judgments is comparative thinking (Mussweiler & Epstude, 2009). Comparisons enable people to focus on only a subset of target information and to rely more heavily on readily available information about a comparison standard. Comparisons thus not only substantially affect the outcome of judgments (e.g., Choplin & Hummel, 2002) but also make them more efficient.

However, not all comparisons are created equal. Because comparisons could be based on a large number of features (Hummel & Holyoak, 1997), people tend to take only a specific kind of information into account. In some cases, they primarily search for similarities between two entities, thus adopting a similarity comparison focus (Mussweiler, 2001; Shepard & Arabie, 1979). In other cases, they put their attention on differences between two stimuli, thus adopting a dissimilarity comparison focus (Mussweiler, 2001; Restle, 1959). Although abundant research has demonstrated that these two comparison foci lead to different consequences (Förster, 2009; Häfner, 2004; Mussweiler, 2003), it remains unclear whether the foci also differ in their efficiency. In this article, we examine whether one of these two comparison foci is conducted more efficiently than the other one.

Two Different Comparative Foci

This basic differentiation between a focus on similarities versus differences can be traced back to two different traditions of comparison research. One line of research examines similarity judgments. Here, the central question is to what extent two presented entities (e.g., objects) are perceived as similar. To explain similarity judgments, some models focus on similarities and others on differences (see Navarro & Lee, 2004). On the one hand, people judge two stimuli as more similar the more they have in common (Shepard & Arabie, 1979). On the other hand, stimuli appear less similar to the extent that one has a feature the other does not (Lee, 1998; Restle, 1959). In his contrast model, Tversky (1977) combines these two routes to similarity judgments by proposing that similarity increases as a function of common features and decreases as a function of distinctive features, while allowing for

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different degrees of emphasis to be placed on each (Ritov, Gati, & Tversky, 1990).

The second line of comparison research examines comparative judgments. Here, the central question is to what extent the judgment of a single target is affected by a comparison between the target and a comparison standard (e.g., Mussweiler, 2003). These judgments also crucially depend on perceived similarities and dissimilarities. Mussweiler (2003), for example, argues in his selective accessibility model that a comparative judgment will be based more on similarities or dissimilarities depending on an initial similarity assessment. If this assessment results in a similarity hypothesis, it initiates a search for similarities and a selective activation of hypothesis-consistent information. Consequently, the target assimilates toward the standard. However, starting out with a dissimilarity hypothesis leads to a focus on dissimilarities and thus judgmental contrast.

Thus, during comparison people only focus on a subset of information and differentiate between similarities and dissimilarities. This raises the question of when and why people focus on what. Both research on similarity judgments and research on comparative judgments suggest that this may depend on stimulus characteristics as well as activated thinking styles. In similarity judgments, the alignability of stimuli characteristics matters. Alignable features carry more weight than nonalignable features (Gentner & Markman, 1997). This is true within commonalities, in a sense that matches in place (matches between alignable objects) increase similarity more than matches out of place (Goldstone, 1994), and within differences, in a sense that alignable differences decrease similarity more than nonalignable differences (Markman & Gentner, 1993). Similarly, during comparison people focus on features that share a common spatial location, even if they are nonalignable (i.e., not a contrasting difference related to a structural commonality; Wisniewski & Middleton, 2002). Another example of a stimulus characteristic that influences similarity is thematic relation. Thematic relation increases perceived similarity (Wisniewski & Bassok, 1999), specifically by increasing the contribution of commonalities (Golonka & Estes, 2009). Research on comparative judgments also has revealed that characteristics of the target and the comparison standard guide the comparison process. For example, extreme standards trigger an initial dissimilarity hypothesis and a search for dissimilarities, whereas moderate standards trigger a search for similarities (Mussweiler, Rüter, & Epstude, 2004). Similarly, comparing people who belong to the same category leads to a similarity focus and assimilation, whereas comparing two people belonging to different categories leads to a dissimilarity focus and contrast (Damisch, Mussweiler, & Plessner, 2006).

The comparisons focus depends not only on diverse stimulus characteristics but also on the perceiver's activated thinking style. Förster (2009), for example, demonstrated that participants in a global processing mode generate more similarities than dissimilarities between two given stimuli than participants in a local processing mode. Thus, global processing facilitates focusing on similarities and increases perceived similarity. Furthermore, a comparative focus can be procedurally primed. To do so, participants typically engage in a comparison task prior to the focal judgment task, thereby solely focusing on similarities or dissimilarities (Mussweiler, 2001). The influence of these comparison foci is observable in self-judgments (Häfner, 2004; Mussweiler, 2001), social judgments (Corcoran, Hundhammer, & Mussweiler, 2009; Corcoran & Mussweiler, 2009), affective reactions (Epstude & Mussweiler, 2009), behavioral consequences of comparisons (Haddock, Macrae, & Fleck, 2002), priming of characteristics (Mussweiler & Damisch, 2008), anchoring effects (Chapman & Johnson, 1999), and pairings of conditioned with unconditioned stimuli (Corneille, Yzerbyt, Pleyers, & Mussweiler, 2009).

Previous research has thus well established that the search for either similarities or dissimilarities is a core mechanism of comparison processes. However, do these foci also differ in terms of their efficiency? We know that the speed of similarity judgments greatly depends on stimulus characteristics. For example, identifying uniformity between two stimuli seems to be very easy (Donderi & Zelnicker, 1969), and even small distortions are readily detected (Young & Wasserman, 2002). In contrast, we know only little about the efficiency of different thinking styles during comparison (Corcoran & Mussweiler, 2010). A look at the psychological mechanisms contributing to the efficiency of comparative thinking in general, however, suggests that a focus on similarities or dissimilarities may indeed be differentially efficient.

The Efficiency of Comparative Thinking

Mussweiler and Epstude (2009) proposed comparative thinking as a tool for increasing judgmental efficiency. They showed that participants who were primed to process information in a more comparative manner were faster in making the critical target judgment. Imagine you will have to move to a new town and search the Internet for available apartments. Comparing the new apartment with your present apartment might help you to quickly judge whether it fits your criteria. The efficiency of comparative thinking is due to two psychological mechanisms: information focus and information transfer (Mussweiler & Epstude, 2009). First, people search less for target information before making their judgment, supposedly because they selectively focus on those target features that are related to the alignable structure. In other words, while surfing the Web, you might specifically check features of new apartments that also characterize your old apartment. Second, judges use easily accessible information about the standard to fill in for missing target information (Mussweiler & Epstude, 2009). This information transfer allows them to partially forgo the search for target information that is unavailable or difficult to obtain. For example, even though you might not easily find information about the new apartment's utility costs, you might assume that it will roughly be the same as in your old apartment.

Notably, both mechanisms (information focus and information transfer) seem to be more easily engaged during similarity- rather than dissimilarity-focused comparisons. First, because the identification of an alignable structure—a similarity of the relational structure among individual features—requires an initial focus on similarities, identifying and using this structure should be easier and more pronounced in similarity-focused comparisons. People in a similarity focus should thus concentrate their comparison on corresponding values of the two stimuli. Second, because information transfer is an appropriate strategy only if target and standard are perceived as similar (Medin, Goldstone, & Gentner, 1993), it is more likely to occur if judges focus on similarities. The more similar two entities are perceived, the more likely properties

of the one are transferred or mapped on the other (Wisniewski, 1996).

On the basis of this reasoning, we expect similarity-focused comparisons to be more efficient and faster than dissimilarity-focused comparisons. In two studies, we tested this hypothesis addressing both traditions of comparison research. In Study 1, we assessed participant's reaction times for similarity judgments between two objects after priming them to focus on either similarities or dissimilarities. In Study 2, we turned to comparative judgments and studied a mechanism involved in the efficiency advantage of comparative thinking. Specifically, we examined whether a similarity focus indeed leads to a more focused predecisional information search than a dissimilarity focus.

Study 1

Participants were exposed to pairs of geometrical figures that vary on six dimensions and were asked to indicate whether these figures were more similar or dissimilar overall. If similarity-focused comparisons are more efficient, then participants who are primed to focus on similarities should be faster at judging the similarity of the two figures.

Method

Participants. Fifty-one students at the University of Cologne participated for a chocolate bar as compensation.

Materials and procedure. Participants were informed that they would work on two ostensibly unrelated tasks. The first was a procedural priming task to elicit the respective comparative thinking style (Mussweiler, 2001). About half the participants were asked to list similarities and the other half to list dissimilarities between two sketches taken from Markman and Gentner (1996, p. 235, Figures A and C).

The second task was computerized and was introduced as a visual perception test. Instructions pointed out that participants would be asked to compare sets consisting of two figures (each 2.5 × 2.5 in.) that varied on six dimensions, with two possible characteristics for each dimension. Each figure was composed of two interlocking figures that varied on the dimensions form, color, and pattern of the inner figure and of the outer figure (see Figure 1 for examples). There were two different sets of figures. In one set, the variation on the dimensions color and pattern was more pronounced. However, the different sets of stimuli did not differ significantly in any of the analyses so that the data of both sets were collapsed.

In the instructions, two figures that were dissimilar on all six dimensions were presented as an example but explained that in the test, the two presented figures would always have some dimensions on which they were similar and some on which they were dissimilar. Participants' task was to decide as quickly and as accurately as possible whether the majority of dimensions for the two figures were similar or dissimilar. To ensure that participants engaged in an overall comparison and did not actually count the dimensions, they were encouraged to use their initial intuition as base for their judgment.

Altogether, 22 pairs of figures were presented to the participants in the center of the computer screen. The first four pairs were practice trials in which the ratio of similar to dissimilar dimensions was 1:5 or 5:1. Participants received no accuracy feedback but were asked to react faster if they needed more than 3 s. Afterwards, they continued with the 18 critical trials in which the ratio of similar to dissimilar dimensions was 4:2 or 2:4 (nine trials each). One of the two similar (or dissimilar) dimensions always belonged to the inner and one to the outer figure. The 18 critical trials were presented in a fixed, intermixed order. If participants perceived the majority of dimensions of the figure pairs as similar, they had to press the *right* key on a response box, but if they perceived it as dissimilar, they had to press the *left* key. The labels of the keys were presented in the respective corners of the screen.

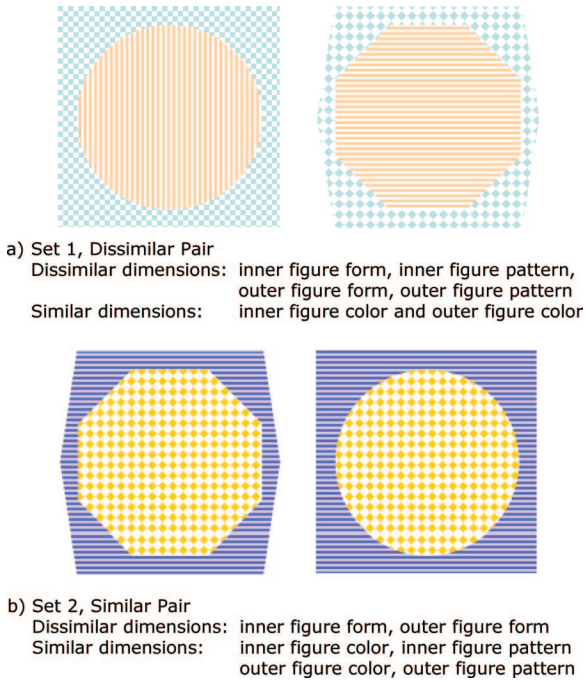

Figure 1. Example of figure pairs used as stimulus materials (Study 1).

Results and Discussion

We dropped one participant due to a high error rate (11 out of 18). Furthermore, we excluded response latencies from incorrect answers (31.0% of all trials) and response latencies deviating by more than two standard deviations from the mean (1.6% of correct trials).

Priming task. On average, participants listed more dissimilarities ($M = 11.87$, $SD = 2.93$) than similarities ($M = 8.59$, $SD = 2.65$), $t(48) = 4.15$, $p < .001$.

Response latencies. Inspection of the means depicted in Figure 2 reveals that participants were faster at deciding whether the two figures were similar or dissimilar if they had been induced to focus on similarities ($M = 1{,}451$ ms, $SD = 478$) rather than dissimilarities ($M = 1{,}757$ ms, $SD = 531$). In a 2 (similarity focus vs. dissimilarity focus) × 2 (similar figure pairs vs. dissimilar figure pairs) mixed model analysis of variance, with figure similarity as the within-subject factor, this pattern produced a significant main effect of priming, $F(1, 48) = 4.57$, $p < .04$, $d = 0.62$. None of the other effects reached significance (all Fs < 1). To rule

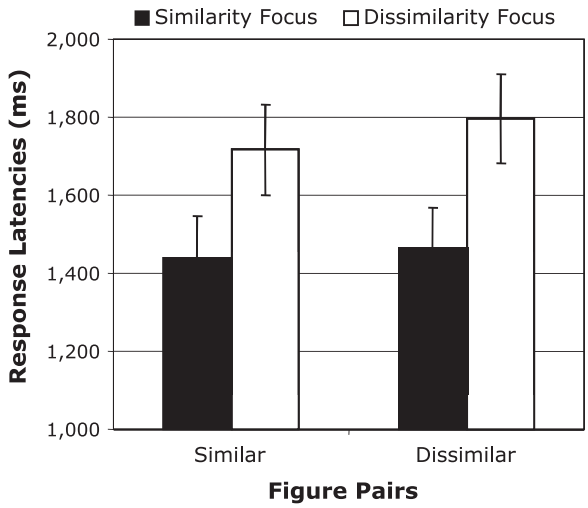

Figure 2. Mean response latencies in milliseconds for similarity judgments by priming (similarity focus vs. dissimilarity focus) and figure similarity (similar figure pairs vs. dissimilar figure pairs) in Study 1. Error bars represent standard errors.

out different levels of mental fatigue due to the priming task as an explanation of this effect, we included the amount of (dis)similarities listed as a covariate. In this analysis, the main effect of priming remains significant, $F(1, 47) = 5.39$, $p < .03$, $d = 0.68$.

Error rates. Because we wanted to make sure that participants with a similarity focus did not engage in a speed–accuracy trade-off, we analyzed the mistakes. As depicted in Figure 3, participants made more mistakes if they judged similar figures ($M = 3.28$, $SD = 1.43$) than if they judged dissimilar figures ($M = 2.30$, $SD = 1.39$), $F(1, 48) = 10.49$, $p < .01$. More importantly, priming did not have a significant effect on errors ($Fs < 1.36$, $p > .25$). In addition, we reanalyzed the speed of the decisions with the total number of mistakes participants made as a covariate. In this analysis, the main effect of priming remains significant, $F(1, 47) = 3.96$, $p = .05$, $d = 0.58$.

These results provide first evidence that similarity-focused comparisons are more efficient than dissimilarity-focused comparisons. Participants who were procedurally primed to focus on similarities were faster at indicating whether two figures are more similar or more dissimilar than those who were primed to focus on dissimilarities. Importantly, faster judgments in the similarity focus condition did not come at the cost of more mistakes.

It might be surprising that a focus on similarities facilitated the ability not only to identify two figures as similar but also to identify them as dissimilar. However, the decision "dissimilar" might simply be based on participants' inability to detect enough similarities. Thus, regardless of the stimuli, they could succeed in this specific task by solely focusing on similarities.

Study 2

The nature of Study 1 resembles the comparison research line of similarity judgments. We demonstrate that it is more efficient to adopt a similarity focus in order to decide whether two presented stimuli are similar or dissimilar. But how about comparative judgments? Does this efficiency advantage also hold for judgments of a single target stimulus if this judgment is based on a comparison with a standard? Study 2 was designed to test this possibility, adopting a paradigm from Mussweiler and Epstude (2009). Participants were asked to judge an apartment on several dimensions. Previous research demonstrates that such judgments involve spontaneous comparisons, even if participants are neither explicitly instructed to compare nor confronted with a standard (Dunning & Hayes, 1996; Mussweiler & Rüter, 2003). Furthermore, Mussweiler and Epstude (2009, Study 1) showed that increased comparative thinking facilitates judgments within this paradigm. This indicates that participants spontaneously engaged in comparisons during the target judgments.

The second purpose of Study 2 was to study one mechanism that underlies the efficiency advantage of comparative thinking. Mussweiler and Epstude (2009) found evidence for two mechanisms (information focus and information transfer), but they did not distinguish between similarity-focused and dissimilarity-focused comparisons. Do people in a similarity focus transfer more information from a standard to a target and also focus on less target information? Research on the consequences of comparisons provides strong evidence for information transfer: Participants with a similarity focus assimilate the target to the standard and thereby ascribe the attributes of the standard to the target (e.g., Mussweiler, 2001). However, it is not clear whether a similarity focus also facilitates information focus. If participants in a similarity focus indeed retrieve less information about the apartment in order to make their final judgments than participants in a dissimilarity focus, then this would provide further evidence for the efficiency advantage of similarity-focused comparisons.

Method

Participants. Thirty-six students of the University of Cologne participated for a chocolate bar as compensation.

Procedure. Participants were told that they would work on two unrelated tasks. In the first task, the procedural priming task,

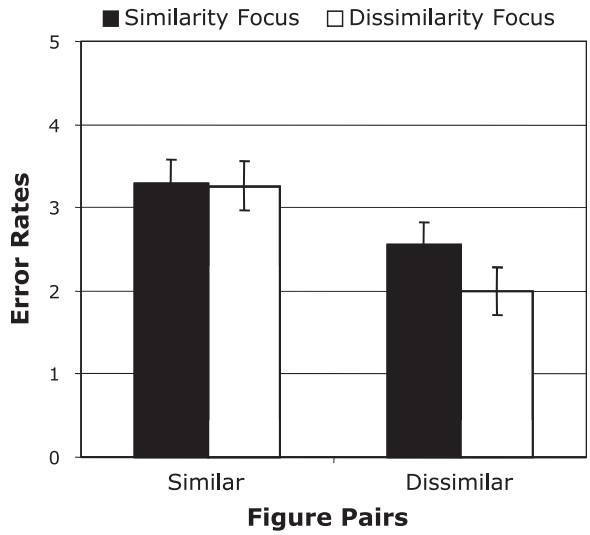

Figure 3. Mean error rates for similarity judgments by priming (similarity focus vs. dissimilarity focus) and figure similarity (similar figure pairs vs. dissimilar figure pairs) in Study 1. Error bars represent standard errors.

participants received a color picture of a jungle scene that was divided by a vertical line. About half the participants were asked to list all the similarities and the other half to list all the dissimilarities they could find between the two halves.

Participants then completed the critical judgment task, which was computerized and was introduced as a study on Internet advertisements. Participants were informed that their task was to judge a fictitious apartment on several dimensions (e.g., size of the apartment). To do so, they could receive background information pertaining to each judgmental dimension by clicking buttons on the screen with cues about specific kinds of information. For example, for the judgment about the size of the apartment, some of the available cues were labeled as the number of rooms, type of building, and number of bathrooms. Participants could freely choose how many cues they wanted to select, and how much background information they thus received. In summary, five judgments had to be made about the apartment: the overall size of the apartment, the size of the room for rent, the price of the rent, the price of additional costs, and the distance to the university. The list of cues was different for each dimension. A total of 44 cues were presented.

Results and Discussion

Priming task. Participants listed a similar amount of similarities ($M = 9.37$, $SD = 3.18$) and dissimilarities ($M = 10.41$, $SD = 3.00$), $t(34) = 1.01$, *ns.*

Information retrieval. We expected participants who were primed to focus on similarities to retrieve fewer cues about the apartment than participants who were primed to focus on dissimilarities. We calculated the sum of all retrieved cues per participant as our dependent variable. As expected, participants who were primed to focus on similarities selected significantly less information ($M = 24.00$, $SD = 8.06$) than participants who were primed to focus on dissimilarities ($M = 29.12$, $SD = 7.02$), $t(34) = 2.02$, $p < .05$, $d = 0.69$.

Judgments. We also examined whether participants in both conditions judged the apartment differently. A difference in these judgments could indicate that the judgments in one condition are more biased, and therefore less accurate, than in the other. Because the critical estimates allow for almost unrestrained variance, we first excluded estimates that deviated from the question mean by more than two standard deviations. The *z*-transformed individual judgments were averaged into one index (see Mussweiler & Epstude, 2009). Neither the mean ($M_{sim} = 0.023$, $M_{dis} = -0.047$), $t(34) < 1$, *ns*, nor the variance ($M_{sim} = 0.22$, $M_{dis} = 0.21$), $F(1, 34) < 1$, *ns*, of participants' judgments of the apartment differs between priming conditions.

These findings demonstrate that the comparative thinking style of focusing on similarities does indeed limit the search for target information more than dissimilarity-focused comparisons. Thus, the similarity focus made this comparative judgment more efficient without making it less accurate.[1]

General Discussion

We set out to demonstrate that not all comparisons are equally efficient. Even though comparative thinking in general is a helpful tool for making judgments efficiently (Mussweiler & Epstude, 2009), one type of comparison appears to be more efficient than the other. Specifically, we found evidence that comparisons that focus on similarities between target and standard entail a more limited search for target information and are conducted more quickly than comparisons with a focus on dissimilarities.

We used two different types of judgment tasks to test our hypothesis, thereby representing both traditions of comparison research. In Study 1, we explicitly asked participants to compare geometrical figures and to make simple dichotomous similarity judgments about them. In Study 2, participants had to judge a fictitious object (an apartment) on several dimensions. Even though we did not present an explicit comparison standard, this task resembles a comparative judgment, because participants tend to use self-generated standards (see Mussweiler & Epstude, 2009). Thus, both tasks imply a comparison process and both were influenced by the priming of a comparison focus. More important, in both tasks, participants profited from a search for similarities. They reacted faster and they searched for less information if they were primed to focus on similarities rather than dissimilarities.

The efficiency advantage of comparative thinking in general is related to two underlying mechanisms: information focus and information transfer (Mussweiler & Epstude, 2009). We suggest that these mechanisms are more effective if people compare with a similarity focus. The information focus mechanism follows the structural alignment approach, which proposes a bigger weight of alignable features in similarity judgments (Gentner & Markman, 1997). Because structural alignment is based on the similarity between the target and the standard, people in a similarity focus should find and focus on alignable features more easily. The results in Study 2 confirm this hypothesis.

We did not directly test for the second mechanism: information transfer. However, Medin et al. (1993) suggest that ". . .accessed information for one concept will tend to be carried over and tested for applicability to the other concept" (p. 259). Thus, applicability is crucial for information transfer, and this will be higher if both concepts are perceived as similar. There is indeed plenty of evidence demonstrating that people with a similarity focus readily transfer accessible information to a target (Mussweiler, 2001; Mussweiler & Damisch, 2008). Therefore, both mechanisms that underlie the efficiency advantage of comparative thinking, information focus and information transfer, seem to be more pronounced in comparisons with a similarity focus than with a dissimilarity focus.

However, the efficiency advantage of similarity-focused comparisons might not always be easily explained by these two mechanisms alone. For example, one might wonder whether they could explain the results of Study 1. We believe that the complexity of our task may have made it difficult to base the judgment on all available information. The high error rate of over 30% clearly indicates that the task was difficult. Focusing

[1] Comparisons with the noncomparative control condition in Study 1b by Mussweiler and Epstude (2009) reveals that only the similarity focus condition ($M = 24.00$), but not the dissimilarity focus condition ($M = 29.12$), differs significantly from the control condition ($M = 31.30$). However, because searching for similarities might be the default in comparisons (Mussweiler, 2003), comparative thinking might facilitate judgment in most cases.

on only a subset of relevant information might therefore be a useful strategy to simplify the task. If participants in a similarity focus are better in doing so, then that might explain the faster reaction times, but further research is needed to substantiate this possibility.

Our data demonstrate similarity-focused comparisons to be more efficient than dissimilarity-focused comparisons. What are the possible consequences of such an efficiency difference, and are there conditions under which this difference might not occur? One could conclude that the higher efficiency of similarity-focused comparison might result in a more frequent use of this type of comparison (Mussweiler, 2003). However, similarity-focused comparisons might not always be more helpful than dissimilarity-focused comparisons. For example, if people strive to differentiate two stimuli or have to make a choice between two objects, a similarity-focused comparison might be rather hindering. In other situations, neither information focus nor information transfer might be applicable to a comparison. For example, simple comparative tasks like judging whether a white and a black square have the same color might leave no room for facilitation due to information transfer or information focus. All the information is readily available, and no transfer is needed. Furthermore, the information is so limited that focusing only on a subset of information is not helpful. However, most of our daily judgments are different. People are often overwhelmed by the information and the complexity in it. In addition, they are often distracted and under time pressure. The efficiency of similarity-focused comparative thinking might thus provide a way to preserve scarce cognitive resources.

References

Chapman, G. B., & Johnson, E. J. (1999). Anchoring, activation, and the construction of values. *Organizational Behavior and Human Decision Processes, 79,* 115–153. doi:10.1006/obhd.1999.2841

Choplin, J. M., & Hummel, J. E. (2002). Magnitude comparisons distort mental representations of magnitude. *Journal of Experimental Psychology: General, 131,* 270–286. doi:10.1037/0096-3445.131.2.270

Corcoran, K., Hundhammer, T., & Mussweiler, T. (2009). A tool for thought! When comparative thinking reduces stereotyping effects. *Journal of Experimental Social Psychology, 45,* 1008–1011. doi:10.1016/j.jesp.2009.04.015

Corcoran, K., & Mussweiler, T. (2009). Comparative thinking styles in group and person perception: One mechanism-many effects. *Social and Personality Psychology Compass, 3,* 244–259. doi:10.1111/j.1751-9004.2009.00173.x

Corcoran, K., & Mussweiler, T. (2010). The cognitive miser's perspective: Social comparison as a heuristic in self-judgements. *European Review of Social Psychology, 21,* 78–113.

Corneille, O., Yzerbyt, V. Y., Pleyers, G., & Mussweiler, T. (2009). Beyond awareness and resources: Evaluative conditioning may be sensitive to processing goals. *Journal of Experimental Social Psychology, 45,* 279–282. doi:10.1016/j.jesp.2008.08.020

Damisch, L., Mussweiler, T., & Plessner, H. (2006). Olympic medals as fruits of comparison? Assimilation and contrast in sequential performance judgments. *Journal of Experimental Psychology: Applied, 12,* 166–178. doi:10.1037/1076-898X.12.3.166

Donderi, D. C., & Zelnicker, D. (1969). Parallel processing in visual same-different decisions. *Perception & Psychophysics, 5,* 197–200. doi:10.3758/BF03210537

Dunning, D., & Hayes, A. F. (1996). Evidence of egocentric comparison in social judgment. *Journal of Personality and Social Psychology, 71,* 213–229. doi:10.1037/0022-3514.71.2.213

Epstude, K., & Mussweiler, T. (2009). What you feel is how you compare: How comparisons influence the social induction of affect. *Emotion, 9,* 1–14. doi:10.1037/a0014148

Förster, J. (2009). Relations between perceptual and conceptual scope: How global versus local processing fits a focus on similarity versus dissimilarity. *Journal of Experimental Psychology: General, 138,* 88–111. doi:10.1037/a0014484

Gentner, D., & Markman, A. B. (1997). Structural mapping in analogy and similarity. *American Psychologist, 52,* 45–56. doi:10.1037/0003-066X.52.1.45

Goldstone, R. L. (1994). Similarity, interactive activation, and mapping. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 20,* 3–28. doi:10.1037/0278-7393.20.1.3

Golonka, S., & Estes, Z. (2009). Thematic relations affect similarity via commonalities. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 35,* 1454–1464. doi:10.1037/a0017397

Haddock, G., Macrae, C. N., & Fleck, S. (2002). Syrian science and smart supermodels: On the when and how of perception-behavior effects. *Social Cognition, 20,* 461–479. doi:10.1521/soco.20.6.461.22976

Häfner, M. (2004). How dissimilar others may still resemble the self: Assimilation and contrast after social comparison. *Journal of Consumer Psychology, 14,* 187–196. doi:10.1207/s15327663jcp1401&2_21

Hummel, J. E., & Holyoak, K. J. (1997). Distributed representations of structure: A theory of analogical access and mapping. *Psychological Review, 104,* 427–466. doi:10.1037/0033-295X.104.3.427

Lee, M. D. (1998). Neural feature abstraction from judgments of similarity. *Neural Computation, 10,* 1815–1830. doi:10.1162/089976698300017151

Macrae, C. N., Milne, A. B., & Bodenhausen, G. V. (1994). Stereotypes as energy-saving devices: A peek inside the cognitive toolbox. *Journal of Personality and Social Psychology, 66,* 37–47. doi:10.1037/0022-3514.66.1.37

Markman, A. B., & Gentner, D. (1993). Splitting the differences: A structural alignment view of similarity. *Journal of Memory and Language, 32,* 517–535. doi:10.1006/jmla.1993.1027

Markman, A. D., & Gentner, D. (1996). Commonalities and differences in similarity comparisons. *Memory & Cognition, 24,* 235–249. doi:10.3758/BF03200884

Medin, D. L., Goldstone, R. L., & Gentner, D. (1993). Respects for similarity. *Psychological Review, 100,* 254–278. doi:10.1037/0033-295X.100.2.254

Mussweiler, T. (2001). "Seek and ye shall find": Antecedents of assimilation and contrast in social comparison. *European Journal of Social Psychology, 31,* 499–509. doi:10.1002/ejsp.75

Mussweiler, T. (2003). Comparison processes in social judgment: Mechanisms and consequences. *Psychological Review, 110,* 472–489. doi:10.1037/0033-295X.110.3.472

Mussweiler, T., & Damisch, L. (2008). Going back to Donald: How comparisons shape judgmental priming effects. *Journal of Personality and Social Psychology, 95,* 1295–1315. doi:10.1037/a0013261

Mussweiler, T., & Epstude, K. (2009). Relatively fast! Efficiency advantages of comparative information processing. *Journal of Experimental Psychology: General, 138,* 1–21. doi:10.1037/a0014374

Mussweiler, T., & Rüter, K. (2003). What friends are for! The use of routine standards in social comparison. *Journal of Personality and Social Psychology, 85,* 467–481. doi:10.1037/0022-3514.85.3.467

Mussweiler, T., Rüter, K., & Epstude, K. (2004). The ups and downs of social comparison: Mechanisms of assimilation and contrast. *Journal of Personality and Social Psychology, 87,* 832–844. doi:10.1037/0022-3514.87.6.832

Navarro, D. J., & Lee, M. D. (2004). Common and distinctive features in

stimulus similarity: A modified version of the contrast model. *Psychonomic Bulletin & Review, 11,* 961–974. doi:10.3758/BF03196728

Restle, F. (1959). A metric and an ordering on sets. *Psychometrika, 24,* 207–220. doi:10.1007/BF02289843

Ritov, I., Gati, I., & Tversky, A. (1990). Differential weighting of common and distinctive components. *Journal of Experimental Psychology: General, 119,* 30–41. doi:10.1037/0096-3445.119.1.30

Shepard, R. N., & Arabie, P. (1979). Additive clustering: Representations of similarities as combinations of discrete overlapping properties. *Psychological Review, 86,* 87–123. doi:10.1037/0033-295X.86.2.87

Taylor, S. E. (1981). The interface of cognitive and social psychology. In J. Harvey (Ed.), *Cognition, social behavior, and the environment* (pp. 182–211). Hillsdale, NJ: Erlbaum.

Tversky, A. (1977). Features of similarity. *Psychological Review, 84,* 327–352. doi:10.1037/0033-295X.84.4.327

Tversky, A., & Kahneman, D. (1974, September 27). Judgment under uncertainty: Heuristics and biases. *Science, 185,* 1124–1131. doi:10.1126/science.185.4157.1124

Wisniewski, E. J. (1996). Construal and similarity in conceptual combination. *Journal of Memory and Language, 35,* 434–453. doi:10.1006/jmla.1996.0024

Wisniewski, E. J., & Bassok, M. (1999). What makes a man similar to a tie? Stimulus compatibility with comparison and integration. *Cognitive Psychology, 39,* 208–238. doi:10.1006/cogp.1999.0723

Wisniewski, E. J., & Middleton, E. L. (2002). Of bucket bowls and coffee cup bowls: Spatial alignment in conceptual combination. *Journal of Memory and Language, 46,* 1–23. doi:10.1006/jmla.2001.2801

Young, M. E., & Wasserman, E. A. (2002). Detecting variety: What's so special about uniformity? *Journal of Experimental Psychology: General, 131,* 131–143. doi:10.1037/0096-3445.131.1.131

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Correction to Perfect et al. (2011)

In the article "Eye Closure Reduces the Cross-Modal Memory Impairment Caused by Auditory Distraction," by Timothy J. Perfect, Jackie Andrade, and Irene Eagan (*Journal of Experimental Psychology: Learning, Memory, and Cognition*, 2011, Vol. 37, No. 4, pp. 1008–1013), there is an error reported in the Results section on p. 1010. The sentence appears in the fifth paragraph, and the correct sentence is as follows: "This criterion resulted in two participants being dropped from the noise conditions (one from the instructed eye-closure condition, one from the no-instruction control) and 13 being dropped from the quiet conditions (six from the instructed eye-closure condition, seven from the no-instruction control)."

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